

REMARKS

Claims 1-15 are currently pending. Favorable reconsideration is respectfully requested in view of the remarks presented herein below.

On page 3 of the final Office action ("Action"), the Examiner rejects claims 1-10 and 13-15 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,550,290 to Shimakage ("Shimakage") in view of Japanese Patent Publication No. JP 04-359890 to Yasuhiro et al. ("Yasuhiro"), Mitsubishi Application Note "Using Intelligent Power Modules" ("Mitsubishi Note 1"), further in view of Toshiba Application Guideline 15 ("Toshiba"). Applicants respectfully traverse this rejection.

In order to support a rejection under 35 U.S.C. § 103, the Examiner must establish a *prima facie* case of obviousness. To establish a *prima facie* case of obviousness three criteria must be met. First there must be some motivation to combine the cited references. Second, there must be a reasonable expectation of success. Finally, the combination must teach each and every claimed element. In the present case, claims 1-10 and 13-15 are not rendered unpatentable by the combination of Shimakage, Yashiro, Mitsubishi Note 1 and Toshiba for at least the reason that the combination fails to disclose each and every claimed element as discussed below.

Independent claim 5, and claims 6-10 and 13-15 which variously depend therefrom, defines a method of designing a current supply circuit supplied with an AC voltage of a predetermined effective value voltage. The method includes, *inter alia*, selecting switching elements having a breakdown voltage based on a rated current value, the breakdown voltage being *twice* the *breakdown voltage required* of the switching element when a DC voltage obtained by performing full-wave rectification on said AC voltage is input to said polyphase inverter circuit. Nowhere in any of the cited references is there any disclosure or suggestion of using a switching element with a breakdown voltage that is *twice* the breakdown voltage required when a DC voltage is input to said polyphase inverter circuit as claimed (i.e., a second breakdown voltage is twice a first breakdown voltage).

In response to Applicant's arguments, the Examiner asserts that Toshiba "teaches using a 1700V rated IGBT for a required voltage of 600Vac nominal." Furthermore, the Examiner asserts that "[s]ince the required voltage of 600Vac is rectified to 848V, the breakdown voltage

is taught to be twice the voltage required.” The Examiner’s assertion is unfounded for the following reason.

Although Toshiba discloses using a 1700V rated IGBT for an input voltage of 600V as suggested by the Examiner, which *arguendo*, results in a breakdown voltage twice that of the input voltage, the claimed invention requires that the breakdown voltage be twice that of the *required breakdown* voltage, not the *input* voltage. Conventionally, in the 600V drive of the Toshiba, the required breakdown voltage would be 1200V. However, as noted by Toshiba due to various factors the required breakdown voltage could easily exceed 1200V resulting in the need for the 1700V IGBTs. Therefore, in order for Toshiba to disclose using a breakdown voltage twice the *required breakdown* voltage, Toshiba would have to disclose using a 2400V IGBT instead of the required 1200V, not a 1700V IGBT. The fact that Toshiba *arguendo* discloses a breakdown voltage twice the input voltage is not equivalent to teaching a breakdown voltage twice the *required breakdown voltage* as claimed.

Furthermore, regarding the Examiner’s assertion on page 2 of the Action that “...the DC bus voltage is approximately equal to 2xRMS AC input voltage,” Applicants note that the Examiner is incorrect. Toshiba discloses that the DC bus voltage is $\sqrt{2}$ x RMS AC input voltage, not 2 x RMS AC input voltage as asserted by the Examiner.

Therefore, claims 5-10 and 13-15 are patentable over the combination of Shimakage, Yasuhiro, Mitsubishi Note 1 and Toshiba for at least the fact that the combination fails to disclose or suggest selecting switching elements having a breakdown voltage *twice the required breakdown* voltage as claimed. Reconsideration and withdrawal of the rejection of claims 5-10 and 13-15 is respectfully requested.

Independent claim 1 and claims 2-4, which depend variously therefrom, define a current supply circuit that includes, *inter alia*, the features of claims 5 and 7. Accordingly, claims 1-4 are patentable over the combination of Shimakage, Yasuhiro, Mitsubishi Note 1 and Toshiba for the same reasons presented above with respect to claim 5.

On page 9 of the Action, the Examiner rejects claims 11 and 12 under 35 U.S.C. § 103(a) as being unpatentable over the combination of Shimakage, Yasuhiro, Mitsubishi Note 1 and Toshiba, further in view of Mitsubishi Application Note “General Considerations for IGBT and

Intelligent Power Modules" ("Mitsubishi Note 2"). Applicants respectfully traverse this rejection.

Claims 11 and 12 variously depend from independent claim 5. Therefore, claims 11 and 12 are patentable over the combination of Shimakage, Yasuhiro, Mitsubishi Note 1 and Toshiba for at least those reasons presented above with respect to claim 5. Although Mitsubishi Note 2 may disclose how to determine the switching loss in an IGBT circuit, Mitsubishi Note 2 fails to overcome the deficiencies of Shimakage, Yasuhiro, Mitsubishi Note 1 and Toshiba. Therefore, claims 11 and 12 are patentable over the combination of Shimakage, Yasuhiro, Mitsubishi Note 1, Toshiba, and Mitsubishi Note 2 for at least the reason that the combination fails to disclose each and every claimed feature. Reconsideration and withdrawal of the rejection of claims 11 and 12 under 35 U.S.C. § 103(a) is respectfully requested.

In view of the above amendment, applicant believes the pending application is in condition for allowance.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Penny L. Caudle Reg. No. 46,607 at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37.C.F.R. §§1.16 or 1.17; particularly, extension of time fees.

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Respectfully submitted,

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